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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/827,405	KIM ET AL.	
	Examiner	Art Unit	
	David N. Werner	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action for US Patent Application 10/827,405 is responsive to the Request for Continued Examination filed 20 October 2008, filed in reply to the telephonic interview of 14 October 2008, the Advisory action of 09 October 2008, and the Final Rejection of 18 July 2008. Currently, claims 1–58 are pending.

2. In the previous Final Rejection, claims 57 and 58 were rejected under 35 U.S.C. 101 as non-statutory. Claims 20–23, 29, 30, 32, 39–41, 47, 48, and 50 were rejected under 35 U.S.C. 103(a) as obvious over US 5,502,492 A (Jung) in view of US 4,944,023 (Imao et al.). Claims 24, 28, 31, 42, 46, and 49 were rejected under 35 U.S.C. 103(a) as obvious over Jung in view of Imao, and in view of US 5,903,669 A (Hirabayashi). Claims 1–19, 25–27, 33–38, 43–45, and 51–58 were rejected under 35 U.S.C. 103(a) as obvious over Jung, Imao et al., Hirabayashi, and US Patent 5,796,434 A (Lempel).

3. In the Advisory Action, the rejection of claims 57 and 58 under 35 U.S.C. 101 was withdrawn.

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 October 2008 has been entered.

Response to Arguments

5. Applicant's arguments with respect to the independent claims have been considered but are moot in view of the new ground(s) of rejection. It is respectfully submitted that US Patent Application Publication 2004/0081238 A1 (Parhy) better characterizes the present invention than the previously cited Jung reference. Parhy discloses a system of motion estimation in which a block is divided into subblocks, which are then merged into final subblocks based on the similarity of their motion vectors. This is a "direct" determination of block mode based on similarity of subblock motion vectors.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1–11 and 20–38 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2)

[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 US 780, 787-88 (1876).

transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. In the present invention, the method claims do not state what apparatus performs the claimed steps.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 20-56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application 2004/0190616 A1 (Linzer et al.) in view of US Patent Application Publication 004/0081238 A1 (Parhy). Linzer et al. teaches a device that determines a subblock mode for a macroblock in a video signal. Regarding claim 20, figure 3 shows a flowchart of the method performed by Linzer et al. First, at step 102, motion estimation is performed on a full 16 x 16block, two 16 x 8 subblocks, two 8 x 16 subblocks, and four 8 x 8 subblocks (paragraph 0022), and the best motion vector, determined from a minimum SAD value (paragraph 0023) is chosen for each subblock. This is step (a) in claim 20, performing motion estimation on a unit of first subblocks, in

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[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

which SAD is the claimed "predetermined measure function". Next, in steps 104-110, an 8 x 8 block is further divided into two 8 x 4 subblocks, two 4 x 8 subblocks, and four 4 x 4 subblocks, and a candidate motion vector is assigned to each of these smaller subblocks (paragraph 0025). No motion estimation is actually performed at this step, but the candidate motion vectors are instead determined from a rule set (paragraphs 0021, 0042–0046). Then, the best mode of the 8 x 8 subblock is selected in step 112 (paragraph 0026). This is step (b), determining if a unit of second smaller sub blocks is needed. The candidate vectors which are motion vectors for neighboring 8 x 8 subblocks (paragraphs 0021, 0042) are the claimed "obtained values of the motion vectors". Then, in step 114, a final determination is made whether to use the selected 8 x 8 mode (or subblock within the 8 x 8 block mode), a 16 x 16 mode, a 16 x 8 mode, or an 8 x 16 mode (paragraphs 0027–0031). This is step (c), determining a final block mode. The determination that an 8 x 8 block is not divided into smaller subblocks is considered equivalent to determining that there is no need to perform motion estimation on second subblocks.

The present invention differs from Linzer et al. in that in step (c) of the present invention, the block mode is determined from the similarity of motion vectors of adjacent subblocks, wherein in Linzer et al., final block mode is determined from a minimum SAD value.

Parhy discloses a system for determining motion for a macroblock in a video frame. Regarding claim 20, in Parhy, motion estimation is performed on each subblock in a 16 x 16 block. If neighboring or adjacent subblocks have similar motion vectors,

they are grouped to form a larger block (paragraph 0052). The system searches motion vectors of subblocks having a common edge, and if the motion vector differences are below a threshold, the subblocks are merged (paragraphs 0059–0061). This is the claimed step of "determining a block mode of the video data block directly depending on whether motion vectors of the first sub blocks are similar".

Linzer et al. discloses the claimed invention except for selecting block mode based on the similarity of motion vectors of subblocks. Parhy teaches that it was known to make this selection. Therefore, it would have been obvious to one having ordinary skill in the art to modify the mode determination system of Linzer et al. to select a mode based on subblock motion vector similarity, as taught by Parhy, since Parhy states in paragraph 0016 that such a modification would improve efficiency by reducing the coding of redundant motion vectors.

Regarding claim 21, in Linzer et al., the best candidate vector for subblocks of an 8 x 8 block is selected (paragraph 0025) according to the SAD calculation (paragraph 0047). The SAD measure is the claimed "measure function" of the second subblocks.

Regarding claim 22, in Linzer et al., if a 16 x 16 block is chosen according to the merging of 8 x 8 blocks having similar motion vectors by Parhy, then actual best motion vectors for subblocks of 8 x 8 blocks are not determined. Remember that the "candidate" motion vectors of the subblocks of the 8 x 8 motion vectors are not produced from a motion estimation search (paragraph 0046).

Regarding claim 23, in Parhy, if all subblocks have similar motion vectors, then they are all merged into one block, which is the original 16 x 16 block. In Linzer et al., this is selecting the 16 x 16 mode.

Regarding claim 24, in step 102 of Linzer et al., a block is divided into a first subset of modes comprising a 16 x 16 block, two 16 x 8 blocks, two 8 x 16 blocks, and four 8 x 8 blocks (paragraph 0022). In step 114, if the 8 x 8 subblocks have not been further divided, the choice is between these four modes (paragraphs 0028–0031). By performing the merge function of Parhy on the 8 x 8 blocks, the best of the four modes are chosen. In this case, if Parhy determines all four 8 x 8 blocks have similar motion vectors, then the 16 x 16 mode is chosen (paragraph 0029).

Regarding claim 25, Linzer et al. may use a mode having two 16 x 8 vectors (paragraph 0030). Regarding claim 26, Linzer et al. may use a mode having two 8 x 16 vectors (paragraph 0031). Regarding claim 27, Linzer et al. may use a mode having four 8 x 8 vectors (paragraph 0028). In all of these cases, the appropriate grouping of 8 x 8 vectors to larger groups, including a group comprising the whole 16 x 16 block, are determined by comparing motion vector similarities as in Parhy. Note that the use of 4 x 4 blocks in Parhy is only considered an example embodiment (paragraph 0052) and is not considered limiting.

Regarding claim 28, in Linzer et al., this is step 114 (paragraph 0027), which determines the "best" mode for a macroblock according to the number of bits used to encode the macroblock and the perceived quality of the macroblock (paragraph 0047).

Regarding claim 29, in Parhy, motion vectors are determined to be "similar" if their difference is less than a delta value (paragraph 0060). This delta is the claimed "predetermined limit value".

Regarding claim 30, in Linzer et al., motion vectors are determined according to an SAD function (paragraph 0023).

Regarding claim 31, in Linzer et al., the best mode chosen in step 114 may be determined as the mode that produces the smallest SAD measure (paragraph 0047).

Regarding claim 32, in Parhy, motion vectors are determined to be "similar" if their difference is less than a delta value (paragraph 0060). This delta is the claimed "predetermined limit value".

Regarding claim 33, in Linzer et al., Steps 106–110 of determining candidate motion vectors of the subblocks form step (e), and step 112 of determining the best mode of the 8 x 8 subblock (paragraph 0026) form step (f), if modified to be performed by the process of Parhy of determining similarities of motion vectors in the subblocks of the 8 x 8 block.

Regarding claim 34, in Linzer et al., a single 8 x 8 block may be encoded using a single 8 x 8 vector, if this is determined to be the best mode (paragraph 0026). If this is determined by Parhy merging all 4 x 4 subblocks having similar motion vectors back to the original 8 x 8 block, the conditions of the present invention are satisfied.

Regarding claims 35–37, Linzer discloses a two 8 x 4 vector mode, a two 4 x 8 vector mode, and a four 4 x 4 vector mode (paragraph 0026).

Regarding claim 38, in Linzer et al., a "best" motion vector mode for a macroblock, including the mode of the second subset of blocks (paragraph 0046), is determined according to the number of bits used to encode the macroblock and the perceived quality of the macroblock.

Regarding independent claim 39, in Parhy, circuit 206 that performs motion estimation for the 16 x 16 mode, the 16 x 8 mode, the 8 x 16 mode, and the 8 x 8 mode (paragraph 0033) is the claimed "block divider" and "motion estimator" that performs motion estimation of the first set of subblocks. Circuit 214 which determines the selected motion vector mode from among these four modes if the 8 x 8 blocks have been determined to not be further subdivided (paragraph 0037), is the claimed "block mode determination unit".

Regarding claim 40, , in Linzer et al., if a 16 x 16 block is chosen according to the merging of 8 x 8 blocks having similar motion vectors by Parhy, then actual best motion vectors for subblocks of 8 x 8 blocks are not determined. Remember that the "candidate" motion vectors of the subblocks of the 8 x 8 motion vectors are not produced from a motion estimation search (paragraph 0046).

Regarding claim 41, in Parhy, if all subblocks have similar motion vectors, then they are all merged into one block, which is the original 16 x 16 block. In Linzer et al., this is selecting the 16 x 16 mode.

Regarding claim 42, in step 102 of Linzer et al., a block is divided into a first subset of modes comprising a 16 x 16 block, two 16 x 8 blocks, two 8 x 16 blocks, and

four 8 x 8 blocks (paragraph 0022). In step 114, if the 8 x 8 subblocks have not been further divided, the choice is between these four modes (paragraphs 0028–0031). By performing the merge function of Parhy on the 8 x 8 blocks, the best of the four modes are chosen. In this case, if Parhy determines all four 8 x 8 blocks have similar motion vectors, then the 16 x 16 mode is chosen (paragraph 0029).

Regarding claim 43, Linzer et al. may use a mode having two 16 x 8 vectors (paragraph 0030). Regarding claim 44, Linzer et al. may use a mode having two 8 x 16 vectors (paragraph 0031). Regarding claim 45, Linzer et al. may use a mode having four 8 x 8 vectors (paragraph 0028). In all of these cases, the appropriate grouping of 8 x 8 vectors to larger groups, including a group comprising the whole 16 x 16 block, are determined by comparing motion vector similarities as in Parhy. Note that the use of 4 x 4 blocks in Parhy is only considered an example embodiment (paragraph 0052) and is not considered limiting.

Regarding claim 46, in Linzer et al., this is step 114 (paragraph 0027), which determines the "best" mode for a macroblock according to the number of bits used to encode the macroblock and the perceived quality of the macroblock (paragraph 0047).

Regarding claim 47, in Parhy, motion vectors are determined to be "similar" if their difference is less than a delta value (paragraph 0060). This delta is the claimed "predetermined limit value".

Regarding claim 48, in Linzer et al., motion vectors are determined according to an SAD function (paragraph 0023).

Regarding claim 49, in Linzer et al., the best mode chosen in step 114 may be determined as the mode that produces the smallest SAD measure (paragraph 0047).

Regarding claim 50, in Parhy, motion vectors are determined to be "similar" if their difference is less than a delta value (paragraph 0060). This delta is the claimed "predetermined limit value".

Regarding claim 51, in Linzer et al., step 104 of subdividing 8 x 8 blocks to two 8 x 4 subblocks, two 4 x 8 subblocks, and four 4 x 4 subblocks is the claimed subdivision of blocks Bk into a plurality of subblocks (paragraph 0025). Steps 106–110 of determining candidate motion vectors of the subblocks is the claimed determination of motion vectors of the second subblocks, and step 112 of determining the best mode of the 8 x 8 subblock (paragraph 0026) is the claimed step of determining a block mode, if modified to be performed by the process of Parhy of determining similarities of motion vectors in the subblocks of the 8 x 8 block.

Regarding claim 52, in Linzer et al., a single 8 x 8 block may be encoded using a single 8 x 8 vector, if this is determined to be the best mode (paragraph 0026). If this is determined by Parhy merging all 4 x 4 subblocks having similar motion vectors back to the original 8 x 8 block, the conditions of the present invention are satisfied.

Regarding claims 53–55, Linzer discloses a two 8 x 4 vector mode, a two 4 x 8 vector mode, and a four 4 x 4 vector mode (paragraph 0026).

Regarding claim 56, in Linzer et al., a "best" motion vector mode for a macroblock, including the mode of the second subset of blocks (paragraph 0046), is

determined according to the number of bits used to encode the macroblock and the perceived quality of the macroblock.

Regarding claim 58, the Linzer et al. invention may be implemented in a software embodiment (paragraph 0049) stored on a storage medium (paragraph 0051).

9. Claims 1-19 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linzer et al. in view of Parhy and in view of ITU-T Recommendation H.263, "Video coding for low bit rate communication" (H.263). Claims 1-19 and 57 are directed to selecting one of a plurality of reference pictures for motion estimation. Linzer et al. and Parhy do not disclose this step.

In Linzer et al., the division of a 16 x 16 block into four 8 x 8 blocks in step 102 is step (a), dividing a video data block into 2M first sub blocks. In this case, M is 2. Additionally, the determination of motion vector mode from the 8 x 8 mode, the 8 x 16 mode, the 16 x 8 mode, or the 16 x 16 mode in Linzer et al. is step (e). An 8 x 16 block or 16 x 8 block is a group of "two adjacent first sub blocks" having similar motion vectors, as determined by Parhy.

H.263 is a standard motion video codec designed for low-bandwidth data transmission. Regarding claim 1, H.263 includes an advanced prediction mode in which a macroblock may be divided into up to four sub blocks, each having its own motion vector (pp. 64–68). Additionally, in a PB frame, motion may be forward, backward, or bidirectional (pp. 94–96), with forward prediction using a reference picture that occurs before the present picture, and backward prediction using a reference picture that

occurs after the present picture. The prediction direction, indicated by a MODB syntax element is determined at the block level (pg. 95). Then, selecting a prediction direction is step (b) in claim 1.

In a motion compensation system in which multiple prediction directions are allowed, motion vectors from opposite directions must be dissimilar. For example, in an instance of a smooth motion moving two pixels to the right and one pixel down for every frame, a forward motion vector would be (2, -1), and a backward motion vector would be (-2, 1), since the signs encoded for motion vectors in H.263 do not change depending on prediction direction (pp. 38–40). Then, the determination in Parhy of whether motion vectors are similar must include determination of whether the blocks have the same reference picture in steps (c) and (d).

Linzer et al., in combination with Parhy, discloses the present invention except for multiple reference pictures. H.263 teaches that it was known to encoded blocks in a forward direction or backward direction, with each direction having a different reference picture. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Linzer et al. to encode blocks of bidirectional pictures in a forward or backward direction, as taught by H.263, since H.263 states in page 3 that such a modification would increase the picture rate "considerably without substantially increasing the bit rate".

Regarding claim 2, in Parhy, the grouping of two 8 x 8 blocks into a larger block to form a 8 x 16 block or 16 x 8 block is step (e1). The determination of prediction

direction in H.263 is step (e2). The motion estimation of the 16 x 8 block or 8 x 16 block in Linzer et al. is step (e3).

Regarding claim 3, in Linzer et al., motion estimation on a second 16 x 8 block or a second 8 x 16 block is step (e4), and the determination of prediction direction in H.263 is step (e5).

Regarding claim 4, Linzer et al. determines a block mode among 8 x 8 blocks (the first sub blocks), 16 x 8 blocks or 8 x 16 blocks (the second sub blocks) or the 16 x 16 block (paragraphs 0028–0031) based on "the number of bits used to encode the macroblock and the perceived quality of the macroblock when reconstructed by the decoder", as measured by a minimum SAD value (paragraph 0047). Since a minimized SAD value would produce lesser residual or error data to be encoded with the motion vector, selecting the mode that produces the minimum SAD value is selecting a mode that produces a minimum amount of data.

Regarding claim 5, in Parhy, if no motion vectors of subblocks are similar, then the subblocks are encoded individually without any merging.

Regarding claim 6, in Parhy, motion vectors are determined to be "similar" if their difference is less than a delta value (paragraph 0060). This delta is the claimed "predetermined limit value".

Regarding claim 7, in step 114 of Linzer et al., the coding decision is made between 8 x 8 blocks, 8 x 16 blocks, 16 x 8 blocks, and 16 x 16 blocks (paragraph 0026).

Regarding claim 8, in Linzer et al., the best mode chosen in step 114 may be determined as the mode that produces the smallest SAD measure (paragraph 0047).

Regarding claim 9, in Linzer et al., performing the initial motion estimation 102 for various modes of a PB block is step (b1), and the evaluation of the different modes according to an SAD value is step (b2).

Regarding claim 10, if Parhy determines all four 8 x 8 blocks have similar motion vectors, then the 16 x 16 mode is chosen (paragraph 0029). Since all four blocks have similar motion vectors, they must all have the same reference picture—the picture used as the reference picture for the 16 x 16 block.

Regarding claim 11, if Parhy determines that all four 8 x 8 blocks have dissimilar motion vectors, then in Linzer et al., the 16 x 16 macroblock is encoded in an 8 x 8 mode (paragraph 0028). Then, the prediction direction determined for each block in the initial motion estimation in step 102 is carried over into the final mode determination in step 114.

Regarding independent claim 12, in Parhy, circuit 206 that performs motion estimation for the 16 x 16 mode, the 16 x 8 mode, the 8 x 16 mode, and the 8 x 8 mode (paragraph 0033) is the claimed "block divider" and "motion estimator" that performs motion estimation of the first set of subblocks. Circuit 214 which determines the selected motion vector mode from among these four modes if the 8 x 8 blocks have been determined to not be further subdivided (paragraph 0037), is the claimed "reference picture and block mode determination unit".

Regarding claim 13, the merging of two adjacent blocks having similar motion vectors in Parhy is the claimed step of "grouping the two adjacent first sub blocks". If M is 2, as when the first sub blocks are 8 x 8 blocks, then both the first two adjacent sub blocks and the other 2M-2 subblocks would be a grouping of two 8 x 16 or 16 x 8 sub blocks. For example, if the top left and bottom left 8 x 8 blocks have similar motion vectors, then they are grouped into a left 16 x 8 block. Then, Linzer et al. would encode the block in a 16 x 8 mode containing two "second sub blocks": the left and right 16 x 8 sub blocks (paragraph 0030). The "index" is the MODB syntax element in H.263 indicating prediction direction (pg. 96).

Regarding claim 14, in Linzer et al., the SAD value for each of the picture modes is the claimed "reference value" of accuracy of motion estimation (paragraph 0047).

Regarding claim 15, Linzer et al. determines a block mode among 8 x 8 blocks (the first sub blocks), 16 x 8 blocks or 8 x 16 blocks (the second sub blocks) or the 16 x 16 block (paragraphs 0028–0031) based on "the number of bits used to encode the macroblock and the perceived quality of the macroblock when reconstructed by the decoder", as measured by a minimum SAD value (paragraph 0047). Since a minimized SAD value would produce lesser residual or error data to be encoded with the motion vector, selecting the mode that produces the minimum SAD value is selecting a mode that produces a minimum amount of data.

Regarding claim 16, in Parhy, if no motion vectors of subblocks are similar, then the subblocks are encoded individually without any merging.

Regarding claim 17, in Parhy, motion vectors are determined to be "similar" if their difference is less than a delta value (paragraph 0060). This delta is the claimed "predetermined limit value".

Regarding claim 18, in step 114 of Linzer et al., the coding decision is made between 8 x 8 blocks, 8 x 16 blocks, 16 x 8 blocks, and 16 x 16 blocks (paragraph 0026).

Regarding claim 19, in Linzer et al., the best mode chosen in step 114 may be determined as the mode that produces the smallest SAD measure (paragraph 0047).

Regarding claim 57, the Linzer et al. invention may be implemented in a software embodiment (paragraph 0049) stored on a storage medium (paragraph 0051).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571)272-9662. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. N. W./
Examiner, Art Unit 2621

/Mehrdad Dastouri/
Supervisory Patent Examiner, Art Unit 2621